APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,904	02/14/2002	Ryan C. Johnson	1232.008US1	1885

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EXAMINER
TRAN, KHANH C

ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 06/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.　　2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-71_ is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1,5,7-9,17,21,27,31,35,36,49,50,54,56,57,65 and 71_ is/are rejected.

7)☒ Claim(s) _2-4, 6, 10-16, 18-20, 22-26, 28-30, 32-34, 37-48, 51-53, 55, 58-64 and 66-70_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some *　c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)

　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)

　　Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Objections

1. The numbering of claims is not in accordance with 37 CFR 1.126 which
requires the original numbering of the claims to be preserved throughout the
prosecution. When claims are canceled, the remaining claims must not be renumbered.
When new claims are presented, they must be numbered consecutively beginning with
the number next following the highest numbered claims previously presented (whether
entered or not).

Misnumbered claims 15-69 been renumbered 17-71.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 5, 7-9, 17, 21, 27, 31, 35-36, 49-50, 54, 56-57, 65 and 71 are
rejected under 35 U.S.C. 103(a) as being unpatentable over Franaszek et al. U.S.
Patent 4,486,739.

Regarding claim 1, Franaszek et al. invention is directed to a binary DC
balanced code and an encoder circuit. In column 3, lines 10-25, Franaszek et al.
discloses a coding system wherein each 8-bit input block is broken into a 5 bit

and a 3 bit sub-block and encoded separately while maintaining both DC balance and runlength constraints across all block and sub-block boundaries.

Franaszek et al. does not teach encoding between the n-bit block of binary data and a representation of m-symbol code word as claimed in the application claim.

Franaszek et al. discusses general coding concepts and design in column 4, lines 25-60. Each channel symbol is assigned an algebraic value corresponding to its DC component. The digital sum value (DSV) is defined as the variation in the running sum of the encoded data stream. The coding concept further discloses for an (0,3) code, for example, any symbol can be followed by no more than 3 contiguous identical symbols. In light of coding concept, one of ordinary skill in the art would have recognized that input data block could be modified to encode into m-symbol codeword. Motivation is discussed in the general coding concepts.

Franaszek et al. does not discuss each of the m-symbols including at least five possible values. The general coding concepts only discusses the example of binary or two level codes. Nevertheless, one of ordinary skill in the art would have recognized that it could be extended to least five possible values for each code symbol.

Depending on the constraint (d,k), in one example for an (0,3) code, any symbol can be followed by no more than 3 contiguous identical symbols, for a maximum run length of 4. In view of that, the foregoing teachings encompass the

claimed limitations "*at least one pair of adjacent symbols including a*

predetermined type of transition between values of the symbols of the pair". The

DSV corresponds to the claimed word disparity, and the minimum and maximum

DSVs corresponds to the claimed predetermined range.

Regarding claim 5, as recited in claim 1, each channel symbol is assigned an

algebraic value corresponding to its DC component. The digital sum value (DSV) is

defined as the variation in the running sum of the encoded data stream. The maximum

DSV is denoted by the symbol L and the number levels in the running sum is L+ 1. In

view of that, the claimed limitation is within scope of the general coding concepts.

Regarding claim 7, as recited in claim 1, the input bit block is encoded into

binary-encoded representation of the m-symbol code word.

Regarding claim 8, figure 2 shows the predetermined type of transition includes

symmetric about baseline transition.

Regarding claim 9, figure 2 shows the predetermined type of transition includes

symmetric about zero transition.

Regarding claim 17, the code word includes a non-data code word for signaling

purposes.

Regarding claim 21, Franaszek et al. invention is for transmission over electromagnetic or optical transmission lines.

Regarding claim 27, claim 27 is rejected on the same ground as for claim 1 because of similar scope. Furthermore, figure 1 illustrates the overall functional of the encoder according to Franaszek et al. invention. The encoder includes an input to an adapter interface 10, and encoding switch 18 for output a corresponding m-symbol codeword. The adaptor interface 10, disparity control 16, and encoding switch 18 represents the claimed map circuit.

Regarding claim 31, claim 31 is rejected on the same ground as for claim 5 because of similar scope.

Regarding claim 35, claim 35 is rejected on the same ground as for claim 8 because of similar scope.

Regarding claim 36, claim 36 is rejected on the same ground as for claim 9 because of similar scope.

Regarding claim 49, figures 1 and 10 shows a coder/decoder according to Franaszek et al. invention.

Regarding claim 50, claim 50 is rejected on the same ground as for claim 1 because of similar scope. Furthermore, Franaszek et al. invention teaches both coding and decoding (e.g. figure 10). In view of that, Franaszek et al. teachings include a decoder, which performs the reverse process of the encoder as discussed in claim 27.

Regarding claim 54, claim 54 is rejected on the same ground as for claim 5 because of similar scope.

Regarding claim 56, claim 56 is rejected on the same ground as for claim 8 because of similar scope.

Regarding claim 57, claim 57 is rejected on the same ground as for claim 9 because of similar scope.

Regarding claim 65, the encoder in figure 1 includes a disparity control 16 coupled to the encoding switch, corresponding to the claimed m-symbol register.

Regarding claim 71, figures 1 and 10 shows a coder/decoder according to Franaszek et al. invention.

Allowable Subject Matter

3. Claims 2-4, 6, 10-16, 18-20, 22-26, 28-30, 32-34, 37-48, 51-53, 55, 58-64 and 66-70 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Murdock U.S. Patent 6,351,501 B1 discloses "Apparatus And Method For Providing Direct Current Balanced Code".

Shin et al. U.S. Patent 5,999,571 discloses "Transition-Controlled Digital Encoding And Signal Transmission System".

Walker U.S. Patent 5,892,466 discloses "Coding Scheme For Transmitting Data".

Jung et al. U.S. Patent 6,333,704 B1 discloses "Coding/Decoding System Of Bit Insertion/Manipulation Line Code For High-Speed Optical Transmission System".

Soljanin U.S. Patent 6,188,337 B1 discloses "Low Disparity Coding Method For Digital Data".

Cunningham et al. U.S. Patent 6,430,230 B1 discloses "Methods Of Encoding Payload Bits For Transmission".

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KCT

06/24/2005

Examiner   KHANH TRAN